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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Peter Styczynski et al.
Serial No. : 09/893,252
Filed : June 27, 2001
Title : REDUCTION OF HAIR GROWTH

Art Unit : 1617
Examiner : Gina C Yu

MAIL STOP PETITIONS
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

PETITION TO WITHDRAW NOTICE OF ABANDONMENT

Under 37 CFR §§1.8(b) and 1.181, applicants hereby petition to withdraw the Notice of Abandonment mailed June 2, 2006 (copy enclosed). The application was abandoned under 37 C.F.R. § 1.135 for failure to respond to the Office Action mailed October 19, 2005.

Enclosed are copies of the Reply to Office Action of October 19, 2005. Also enclosed is a copy of the postcard dated January 13, 2006. The Reply to Office Action of October 19, 2005 include a certification that these documents were deposited with the United States Postal Service as first class mail with sufficient postage on January 13, 2006; the certification was signed by the undersigned attorney's secretary, Sherry L. Hunt. Enclosed is a Statement Of Timely Mailing Under 37 C.F.R. § 1.8 Statement Of Sherry L. Hunt.

Applicants submit that the response to the Office action was timely filed and requests that the Notice of Abandonment be withdrawn.

Because the Notice of Abandonment was issued as a result of an error, we believe that no fees are required for our request. If that is not correct, please apply any charges or credits to Deposit Account No. 06 1050.

CERTIFICATE OF MAILING BY FIRST CLASS MAIL

I hereby certify under 37 CFR §1.8(a) that this correspondence is being deposited with the United States Postal Service as first class mail with sufficient postage on the date indicated below and is addressed to the Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

June 8, 2006
Date of Deposit

Signature

Sherry L. Hunt
Typed or Printed Name of Person Signing Certificate

Respectfully submitted,

Date: June 8, 2006

Robert C. Nabinger
Reg. No. 33,431

Fish & Richardson P.C.
225 Franklin Street
Boston, MA 02110
Telephone: (617) 542-5070
Facsimile: (617) 542-8906

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Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

STATEMENT OF TIMELY MAILING UNDER 37 C.F.R. § 1.8
STATEMENT OF SHERRY L. HUNT

I, SHERRY L. HUNT, declare as follows:

I am an employee of the law firm of FISH & RICHARDSON P.C. and have been a patent law secretary for 18 years.

On January 13, 2006, I signed the certificate of mailing stamped directly on the correspondence entitled Reply to Office Action of October 19, 2005, which indicated that the correspondence and accompanying postcard and check were being deposited with the United States Postal Service on January 13, 2006. I made photocopies for the file, sealed the originals in a special envelope preprinted with the address of the Assistant Commissioner of Patents, and left the envelope in one of the designated "pick-up stations".

Knowing the procedures for outgoing mail and my own experience with them, I had reasonable basis to expect that the correspondence would be deposited with the United States Postal Service on the date indicated.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States

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Signature

Sherry L. Hunt
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Code and that such willful false statements may jeopardize the validity of the application or any patents issued thereon.

Respectfully submitted,

Date: June 8, 2006

Sherry L. Hunt

Fish & Richardson P.C.
225 Franklin Street
Boston, MA 02110-2804
Telephone: (617) 542-5070
Facsimile: (617) 542-8906

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Attorney's Docket No.	Express Mail Label No.	Mailing Date	For PTO Use Only
00216-552001		January 13, 2006	Do Not Mark in This Area
Application No.	Filing Date	Attorney/Secretary Init	
09/893,252	June 27, 2001	RCN/slh	
Title of the Invention			
REDUCTION OF HAIR GROWTH			
Applicant			
Peter Styczynski et al.			
Client Reference No.			
H-245 (Kay 32)			
Enclosures			
Response (10 pages)			

FR

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Peter Styczynski et al. Art Unit : 1617
Serial No. : 09/893,252 Examiner : Gina C Yu
Filed : June 27, 2001
Title : REDUCTION OF HAIR GROWTH

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

REPLY TO OFFICE ACTION OF OCTOBER 19, 2005

This is in response to the non-final Office Action dated October 19, 2005.

CERTIFICATE OF MAILING BY FIRST CLASS MAIL

I hereby certify under 37 CFR §1.8(a) that this correspondence is being deposited with the United States Postal Service as first class mail with sufficient postage on the date indicated below and is addressed to the Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

January 13, 2006
Date of Deposit

Signature

Sherry L. Hunt
Typed or Printed Name of Person Signing Certificate

Amendments to the Claims:

This listing of claims replaces all prior versions and listings of claims in the application:

Listing of Claims:

1. (Previously presented) A method of reducing mammalian hair growth which comprises selecting an area of skin on a mammal from which reduced hair growth is desired; and applying to said area of skin a dermatologically acceptable composition comprising an inhibitor of telomerase in an amount effective to reduce hair growth.

2. (Original) The method of claim 1, wherein said inhibitor is ofloxacin.

3. (Original) The method of claim 1, wherein said inhibitor is TMPyP4.

4. (Original) The method of claim 1, wherein said inhibitor is telomerase inhibitor I.

5. (Original) The method of claim 1, wherein said inhibitor is telomerase inhibitor IV.

6. (Original) The method of claim 1, wherein said inhibitor is telomerase inhibitor V.

7. (Original) The method of claim 1, wherein said inhibitor is AZT.

8. (Original) The method of claim 1, wherein said inhibitor is a rubromycin.

9. (Original) The method of claim 1, wherein said inhibitor is a purpuromycin.

10. (Original) The method of claim 1, wherein said inhibitor is 3'-deoxy-2:3'-didehydrothymidine.

11. (Original) The method of claim 1, wherein said inhibitor is dideoxyinosine.

12. (Original) The method of claim 1, wherein said inhibitor is (TTAGGG)3.

13. (Original) The method of claim 1, wherein said inhibitor is levofloxacin.

14. (Original) The method of claim 1, wherein said inhibitor is carbovir.

15. (Original) The method of claim 1, wherein said inhibitor is ACGTTGAGGGGCATC.

16. (Original) The method of claim 1, wherein said inhibitor is 2-[3-(trifluoromethyl)phenyl]isothiazolin-3-one.

17. (Original) The method of claim 1, wherein said inhibitor is ursodeoxycholic acid.

18. (Original) The method of claim 1, wherein said inhibitor is diazaphilonic acid.

19. (Original) The method of claim 1, wherein said inhibitor is alterperylenol.

20. (Original) The method of claim 1, wherein said inhibitor is 5-azacytidine.

21. (Original) The method of claim 1, wherein said inhibitor is a 3,4,9,10-perylenetetracarboxylic diimide-based ligand.

22. (Original) The method of claim 1, wherein said inhibitor is 10H-indolo[3,2-b]quinoline.

23. (Original) The method of claim 1, wherein said inhibitor is a 2'-O-MeRNA telomerase oligomer.

24. (Original) The method of claim 1, wherein said inhibitor is a 2'-O-alkyl RNA telomerase oligomer.

25. (Original) The method of claim 1, wherein said inhibitor is fomivirsen.

26. (Original) The method of claim 1, wherein said inhibitor is a cationic porphryin.

27. (Original) The method of claim 1, wherein said inhibitor is diazaphilonic acid.

28. (Original) The method of claim 1, wherein said inhibitor is telomerase inhibitor II.

29. (Original) The method of claim 1, wherein said inhibitor is telomerase inhibitor III.

30. (Original) The method of claim 1, wherein said inhibitor is telomerase inhibitor VI.

31. (Original) The method of claim 1, wherein said inhibitor is telomerase inhibitor VII.

32. (Original) The method of claim 1, wherein said inhibitor is telomerase inhibitor VIII.

33. (Previously presented) The method of claim 1, wherein the concentration of said inhibitor in said composition is between 0.1% and 30% by weight of the composition.

34. (Original) The method of claim 1, wherein the composition provides a reduction in hair growth of at least 20% when tested in the Golden Syrian Hamster assay.

35. (Original) The method of claim 1, wherein the composition provides a reduction in hair growth of at least 15% when tested in the Golden Syrian Hamster assay.

36. (Original) The method of claim 1, wherein the inhibitor is applied to the skin in an amount of from 10 to 3000 micrograms of said compound per square centimeter of skin.

37. (Original) The method of claim 1, wherein said mammal is a human.

38. (Original) The method of claim 36, wherein said area of skin is on the face of a human.

39. (Original) The method of claim 37, wherein the composition is applied to the area of skin in conjunction with shaving.

40. (Previously presented) The method of claim 37, wherein said area of skin is on a leg of the human.

41. (Previously presented) The method of claim 37, wherein said area of skin is on an arm of the human.

42. (Previously presented) The method of claim 37, wherein said area of skin is in an armpit of the human.

43. (Previously presented) The method of claim 37, wherein said area of skin is on the torso of the human.

44. (Original) The method of claim 1, wherein the composition is applied to an area of skin of a woman with hirsutism.

45. (Original) The method of claim 1, wherein said hair growth comprises androgen stimulated hair growth.

46. (Original) The method of claim 1, wherein the composition further includes a second component that also causes a reduction in hair growth.

47. (Original) The method of claim 1, wherein the inhibitor acts on telomerase.

48. (Original) The method of claim 1, wherein the inhibitor acts on a substrate targeted by telomerase.

52. (Previously presented) The method of claim 1, wherein the composition is applied at least once a day over at least two days.

53. (Previously presented) The method of claim 1, wherein said inhibitor is not a nucleoside analogue.

54. (Previously presented) The method of claim 1, wherein said inhibitor is not AZT.

55. (Previously presented) A method of reducing mammalian hair growth which comprises selecting an area of skin on a mammal from which reduced hair growth is desired; and applying to said area of skin a dermatologically acceptable non-depilatory composition comprising an inhibitor of telomerase in an amount effective to reduce hair growth.

REMARKS

Claims 1-48 and 52-55 are pending in the application. No new matter has been added.

Rejection of Claim 55 under 35 U.S.C. § 112

Claim 55 was rejected under 35 U.S.C. § 112, second paragraph, as allegedly "being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention." In particular, the Examiner alleged that the phrase "a dermatologically acceptable non-depilatory composition" recited in claim 55 is vague and indefinite.

This rejection is respectfully traversed. The apparent basis for this rejection is the introduction of the term "non-depilatory" to claim 55 since the terms "dermatologically acceptable composition," which were present in original claim 1, have not been objected to by the Examiner. Applicants submit that the metes and bounds of the term "non-depilatory" are definite based on the teachings of the specification and the knowledge in the art. A depilatory composition is defined in the Webster Dictionary as "a preparation for removing hair, wool, or bristles." (Merriam-Webster Dictionary 1997, pages 209-210). The specification discloses examples of methods for hair removal (or depilatory methods) as "including shaving, waxing, mechanical epilation, chemical depilation, electrolysis and laser-assisted hair removal." (specification at page 7, lines 1-4). Given the art-recognized meaning of this term, along with the teachings in the specification, one of ordinary skill in the art would have understood that the term "depilatory" means hair removal with a chemical component. Accordingly, the term "non-depilatory" means a composition that does not remove hair. Therefore, Applicants submit that the scope of this limitation is clear, and request that the rejection under 35 U.S.C. § 112, second paragraph, be withdrawn.

Claim Rejections under 35 U.S.C. § 103

Claims 1-48 and 52-55 were rejected under 35 U.S.C. § 103(a) as being unpatentable over West *et al.*, U.S. Patent No. 6,368,789 and Black *et al.*, WO 99/119466 in view of applicants' own admission and Styczynski *et al.*, US Patent No. 6,020,006.

Applicants respectfully traverse this rejection. The pending claims are directed to methods of reducing hair growth by applying to a skin area a composition that includes a telomerase inhibitor. West *et al.* teach methods for treating and diagnosing cellular senescence

(i.e., cessation of cellular growth and replication) and immortalization (i.e., unlimited cellular growth and replicative capacity) by controlling telomere length and telomerase activity. West *et al.* provide data showing that inhibition of telomerase activity *in vitro* correlates with a reduction in the ability of the cell to proliferate in an immortal manner, and thus inhibition of telomerase activity "may be used to control diseases associated with cell immortality, such as neoplasia, and pathogenic parasites." (col. 8, lines 20-22). The therapeutic uses for telomerase inhibitors disclosed by West *et al.* are only in the contexts of immortal cells. In fact, the West reference provides an exhaustive list of cancers and pathogenic parasites that can be treated using telomerase inhibitors (e.g., starting on column 13, line 40 through column 14, line 21, and starting on column 25, line 40 through column 26, line 51, respectively). There is not even a vague suggestion in West of extending the use of telomerase inhibitors to other conditions or disorders, let alone to reduce hair growth. Therefore, West *et al.* do not teach or suggest the use of telomerase inhibitors to reduce hair growth.

As the Examiner points out, the reference teaches that activators of telomerase activity would be useful in forestalling and reversing cellular senescence of a vast number of cells (including hair follicle cells) and thereby treat conditions involving cellular senescence. More specifically, uses of activators of telomerase activity are described as follows:

> Such activators of telomerase would be useful as therapeutic agents to forestall and reverse cellular senescence, including but not limited to conditions associated with cellular senescence, e.g., (a) cells with replicative capacity in the central nervous system, including astrocytes, endothelial cells, and fibroblasts which play a role in such age-related diseases as Alzheimer's disease, Parkinson's disease, Huntington's disease, and stroke, b) cells with finite replicative capacity in the integument, including fibroblasts, sebaceous gland cells, melanocytes, keratinocytes, Langerhan's cells, and hair follicle cells which may play a role in age-related diseases of the integument such as dermal atrophy, elastolysis and skin wrinkling, sebaceous gland hyperplasia, senile lentigo, graying of hair and hair loss, chronic skin ulcers, and age-related impairment of wound healing, (c) cells with finite replicative capacity in the articular cartilage, such as chondrocytes and lacunal and synovial fibroblasts which play a role in degenerative joint disease, (d) cells with finite replicative capacity in the bone, such as osteoblasts and osteoprogenitor cells which play a role in osteoporosis, (e) cells with finite replicative capacity in the immune system such as B and T lymphocytes, monocytes, neutrophils, eosinophils, basophils, NK cells and their

> respective progenitors, which may play a role in age-related immune system impairment, (f) cells with a finite replicative capacity in the vascular system including endothelial cells, smooth muscle cells, and adventitial fibroblasts which may play a role in age-related diseases of the vascular system including atherosclerosis, calcification, thrombosis, and aneurysms, and (g) cells with a finite replicative capacity in the eye such as pigmented epithelium and vascular endothelial cells which may play an important role in age-related macular degeneration. (column 10, lines 10-42)

In view of this passage, the Examiner has taken the position that "[s]ince the reference teaches that the activation of telomerase can delay and reverse the aging of hair follicle cells, a skilled artisan would have obviously envisioned that the inhibitors of telomerase would reduce hair growth." Applicants respectfully disagree. The above-quoted passage provides a vast number of possible target cells and disorders that can theoretically be treated using telomerase activators. Such vast list is a laundry list of cells and disorders having very little in common. Examples of cells that can be treated using the telomerase activators suggested by West *et al.* include CNS (e.g., astrocytes, endothelial cells, fibroblasts); skin cells (e.g., sebaceous gland cells, melanocytes, keratinocytes, Langerhan's cells); bone cells (e.g., osteoblasts and osteoprogenitor cells); vascular endothelial cells (e.g., endothelial cells, smooth muscle cells, and adventitial fibroblasts); immune cells (e.g., B and T lymphocytes, monocytes, neutrophils, eosinophils, basophils, NK cells), cartilage cells (e.g., chondrocytes and lacunal and synovial fibroblasts); hair follicle cells, among others. Similarly, there is a plethora of conditions and/or disorders that can be treated using the telomerase activators disclosed by West *et al.* including neurodegenerative conditions (e.g., Alzheimer's disease, Parkinson's disease, Huntington's disease); degenerative joint diseases; osteoporosis; vascular disorders (e.g., atherosclerosis, calcification, thrombosis, and aneurysms); immune disorders, among others. Given the limited number of examples in the West reference showing the correlation between telomerase length and cell senescence and immortalization, one of ordinary skill in the art would not have had a reasonable expectation of succeeding at using telomerase agonists to treat such an extensive laundry list of diverse cell types in complex disease settings. A person of ordinary skill in the art understandably would not have given much weight to such broad statements.

Moreover, the specific disclosure by West *et al.* of hair follicle cells quoted above is in the context of reversing the senescence believe to be associated with age-related diseases of the

integument. The disclosure is directed to methods of using telomerase activators to rejuvenate hair cells. The present invention has nothing to do with hair follicle rejuvenation. It is directed to the use of telomerase inhibitors to reduce hair cell growth, regardless of the age, senescence, or replicative capacity of the hair cells. It is applied to all subjects young and old, male and female. The fact that activation of telomerase might theoretically rejuvenate hair follicle cells does not in any way teach or suggest that inhibitors of telomerase will reduce hair growth. Nor does it provide a reasonable expectation that inhibitors of telomerase activity would actually work to reduce hair growth. Hair growth is a complex process involving many distinct sets of molecular signals that regulate the epithelium and mesenchyme in the different phases of the hair cycle (i.e., the telogen, anagen, and catagen phase). One of ordinary skill in the art would not have been motivated to reverse the teachings in West to arrive at the claimed invention. As described above, West *et al.* extensively disclose the use of telomerase inhibitors primarily to inhibit the replication of immortal cells. It does not in any way provide the requisite motivation to apply its teachings regarding telomerase inhibitors to the vast number of cells disclosed in the passage quoted above, and in particular, to hair cells. In fact, West *et al.* discloses the use of telomerase activators, not inhibitors, to rejuvenate hair cells. Even in that reference, there is no reverse teaching of using telomerase inhibitors to induce senescence of hair follicle cells. Therefore, the requisite motivation is simply not there. Furthermore, following the teachings of West *et al.*, one of ordinary skill in the art would not have had a reasonable expectation of succeeding at reducing hair growth given the complexities of the cellular interactions involved. Accordingly, following the teachings of West, one of ordinary skill in the art would not have been motivated, or have had a reasonable expectation of success to arrive at the claimed invention.

The Examiner continues to assert that Black *et al.* render obvious the claimed methods because "the prior art makes a reference to the nucleoside analogues including AZT be used in an embodiment along with a vector "to destroy hair follicles."" Applicants respectfully disagree with this assertion. As stated in the Amendment dated June 7, 2005, Black does not teach or suggest using AZT alone as a depilatory agent to destroy unwanted hair. The Black reference discloses mutant enzymes of *Herpesvidiae* thymidine kinase (TK) having an increased ability to phosphorylate a nucleoside analog (e.g., AZT) relative to the unmutated enzymes, as well as

fusion proteins of guanylate kinase (GK) and thymidine kinase. The reference discloses methods for "suicide gene therapy" where a vector encoding the mutant TK or fusion thereof is introduced into a pathogenic cell and used to convert a prodrug into a cytotoxic compound. For example, vectors encoding mutant TK or fusion thereof are introduced into a cancer cell. Prodrugs, such as nucleoside analogs like AZT, are added to the cancer cell expressing the mutant TK or fusion. These mutant enzymes phosphorylate the AZT and convert it into a modified nucleotide triphosphate analog that inhibits chain elongation by DNA polymerase, which in turn causes cell death. As the Examiner is well aware, TK and GK enzymes are completely different from telomerases. TK and GK enzymes phosphorylate nucleoside and nucleoside monophosphate, respectively. Telomerases are enzymes that add hexanucleotide repeats to the ends of chromosomal DNA. The only aspect in common between these enzymes is that they associate with a toxic drug, such as AZT, to kill an unwanted cell via completely different mechanisms. TK and GK enzymes phosphorylate the AZT drug to convert it into a nucleotide triphosphate. Enzymes such as polymerases and telomerases incorporate the nucleotide triphosphate into the chromosome to cause cell death. There is absolutely no teaching or suggestion in Black *et al.* that would have led one of ordinary skill in the art to the use of telomerase inhibitors to reduce hair growth. The suicide gene therapy approach disclosed by Black *et al.* is a completely different way of destroying a target cell from the claimed invention. In fact, the claimed methods are directed to topical applications of telomerase inhibitors. As far as Applicants are aware, gene therapeutic approaches cannot be used topically as they depend on entry into a cell to induce gene expression. There is no teaching in Black *et al.* other than to use the specific gene therapy vehicles disclosed, alone or in combination, with nucleoside analogs to treat a vase number of diseases. Therefore, this reference is simply not relevant to the claimed invention.

For the reasons stated above, Applicants disagree with the Examiner's assertion that West *et al.* and Black *et al.* teach that telomerase inhibitors reduce hair growth. There is neither the requisite motivation, nor a reasonable expectation of success following the teachings in these two references, alone or in combination, to arrive at the claimed methods. The Examiner relies on Styczynski *et al.* to allegedly make up for the deficiencies in the references discussed above. Styczynski *et al.* teach the reduction of hair growth by applying topically an inhibitor of alkaline

phosphatase. The reduction in hair growth disclosed by Styczynski *et al.* is via a completely different mechanism from the one presently claimed. Alkaline phosphatases are totally different enzymes from telomerases. The methods disclosed by Styczynski *et al.* have nothing to do with the suicide gene therapeutic approach disclosed by Black *et al.* In fact, as discussed above, gene therapeutic approached would not have been expected to work when applied topically. Similarly, one of ordinary skill in the art would not have been motivated to use telomerase inhibitors as vehicles for reducing hair growth following the rejuvenating methods disclosed by West. In view of the foregoing, Applicants request that the 35 U.S.C. § 103(a) rejection be withdrawn.

Please apply any other charges or credits to deposit account 06-1050.

Respectfully submitted,

Date: January 13, 2006

Diana Collazo Reg No. 46,635
for Robert C. Nabinger
Reg. No. 33,431

Fish & Richardson P.C.
225 Franklin Street
Boston, MA 02110
Telephone: (617) 542-5070
Facsimile: (617) 542-8906